

IDENTIFICATION OF RETINAL DISEASE USING BLOOD VESSEL EXTRACTION

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INTRODUCTION

Blood vessel in retina is an important component in finding the cardiovascular disease, ophthalmological disease and segmentation of vessel tree in retina is used for computerbased identification systems. It has been identified that in some cases the symptoms of some diseases such as Diabetic Retinopathy, Hemorrhages cannot be differentiated from that of the blood vessels while training the fundus images. The Image segmentation process is examined to increase the accuracy using debauched vessel segmentation method which will help us to remove the blood vessels from the fundus images and provides easy processing. The precise retinal vessel segmentation has been established and executed. The blood vessel extraction is an edge enhancement and detection algorithm are analyzed. The Edge Enhancement and Edge detection method(EEED method) separates the surplus edges and does not consider the blood vessels. The method is faster and finds the good results, the significance of the method to these method is to improve the blood vessels contrast and diffuse the anomalous topographies in the retina image. The process involved in the EEED method is, A retina image is convolved with gaussian large bluring kernel to extract the blood vessels. The blurred image contains only the illumination pattern and other patterns get lost. the Gaussian blurred image is obtained from the retinal fundus image, the other image can be formed in two stages.

The final image is the miniature of two images. The intensity in the lower range only is illuminated in a blood vessels of retinal fundus image. The blood vessels are having the lowest values with increased edges when compared to the background in a minimum. This blurred image is given as an input to the log filter of a certain kernel size. Then it will remove the noise and move blood vessel on images more clearly. The significance of log filter gives the uniform background intensity image. The image consists of higher intensity and maintain uniform intensity and is to be processed for cannial edage detection. It returns a single intensity threshold that separates pixels into two classes, foreground and background. Through this we will get a cleared structure of blood vessels. Then here we are using algorithm is Convolution neural network(CNN). The blood vessel extracted images will be trained using CNN. First we trained the system by giving image input from the dataset. Then we create a corresponding model. Here CNN uses some layers input layer, output layer and hidden layer. From already labeled images in the data set, we give images as input to the system. And it will extract the pixels and generate a pattern, the pattern will be same disease are one pattern, normal ones are one pattern like. So the CNN model has the knowledge to analyse the patterns. And the user uploads an image, the cannial detection will preprocess it. And for detecting disease it will go two CNN and compare the images with the patterns and find the matching one and gives the corresponding output.

MODULES

1.Expert system

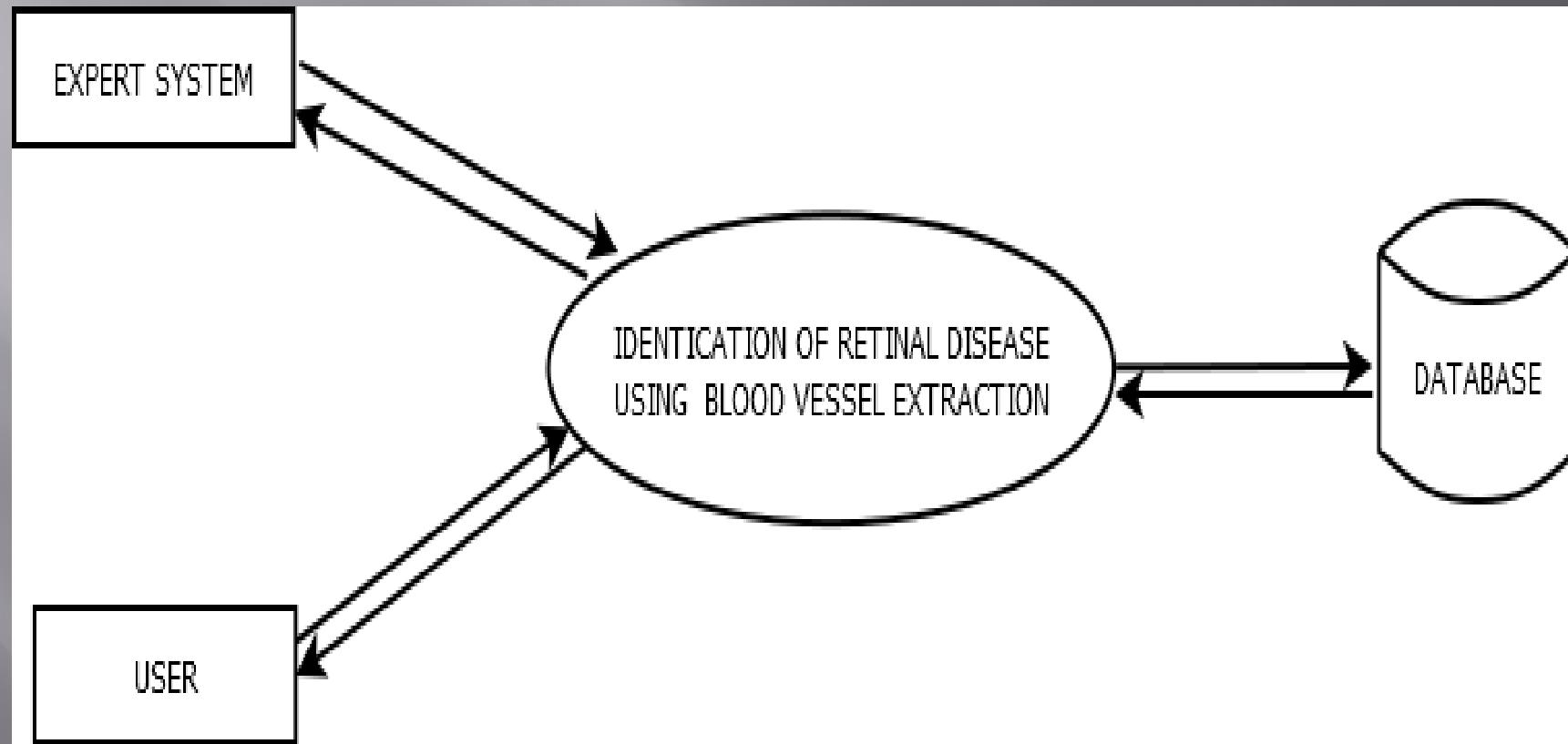
- Login
- Add&manage dataset
- Add&manage tips
- View feedback
- Add&manage treatments

2.User

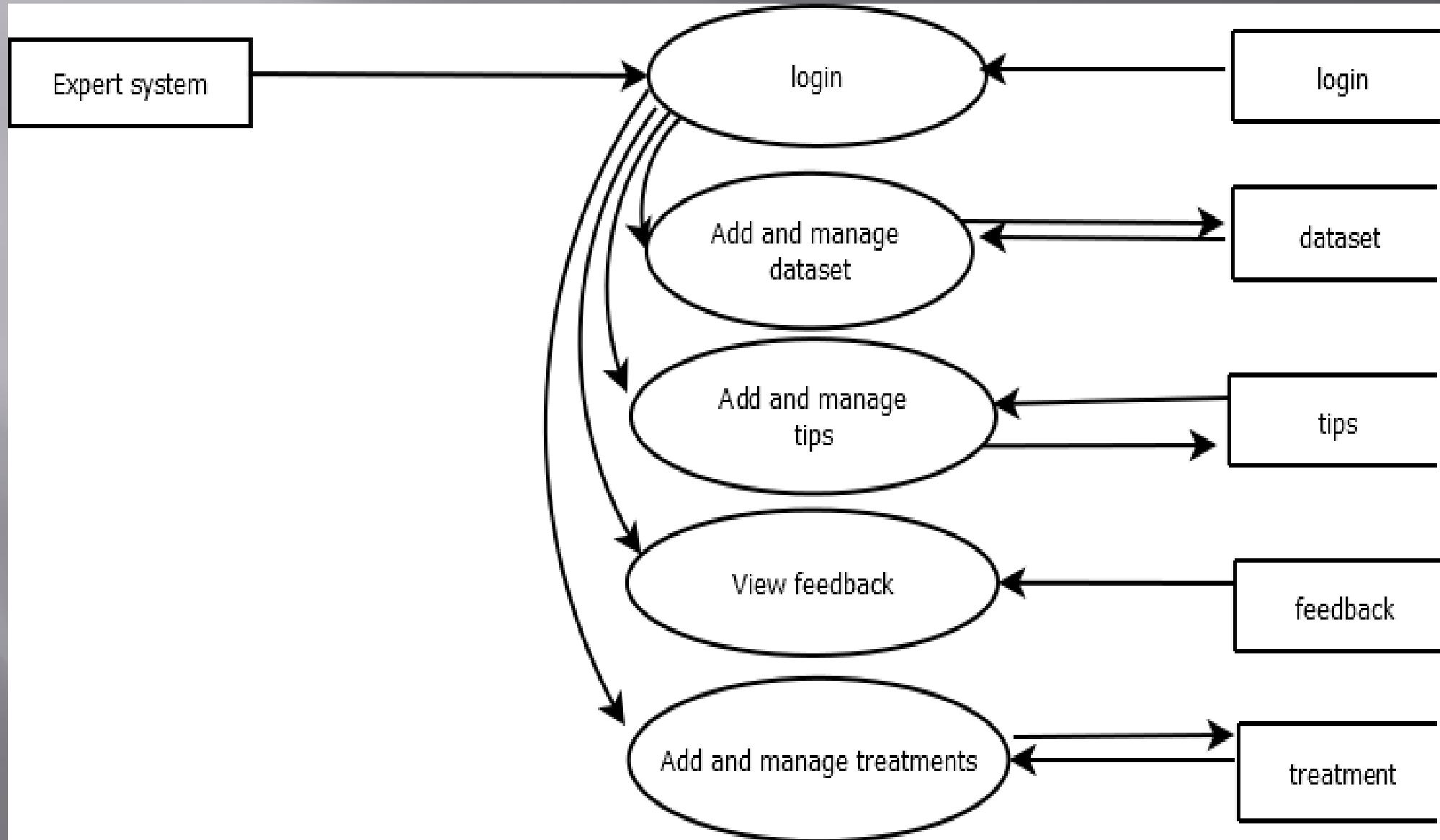
- Registration
- Login
- Upload image&view result
- View tips
- Send feedback
- View treatments

DATA FLOW DIAGRAM

❖ Level 0:



❖ Level 1:



❖ Level 2:

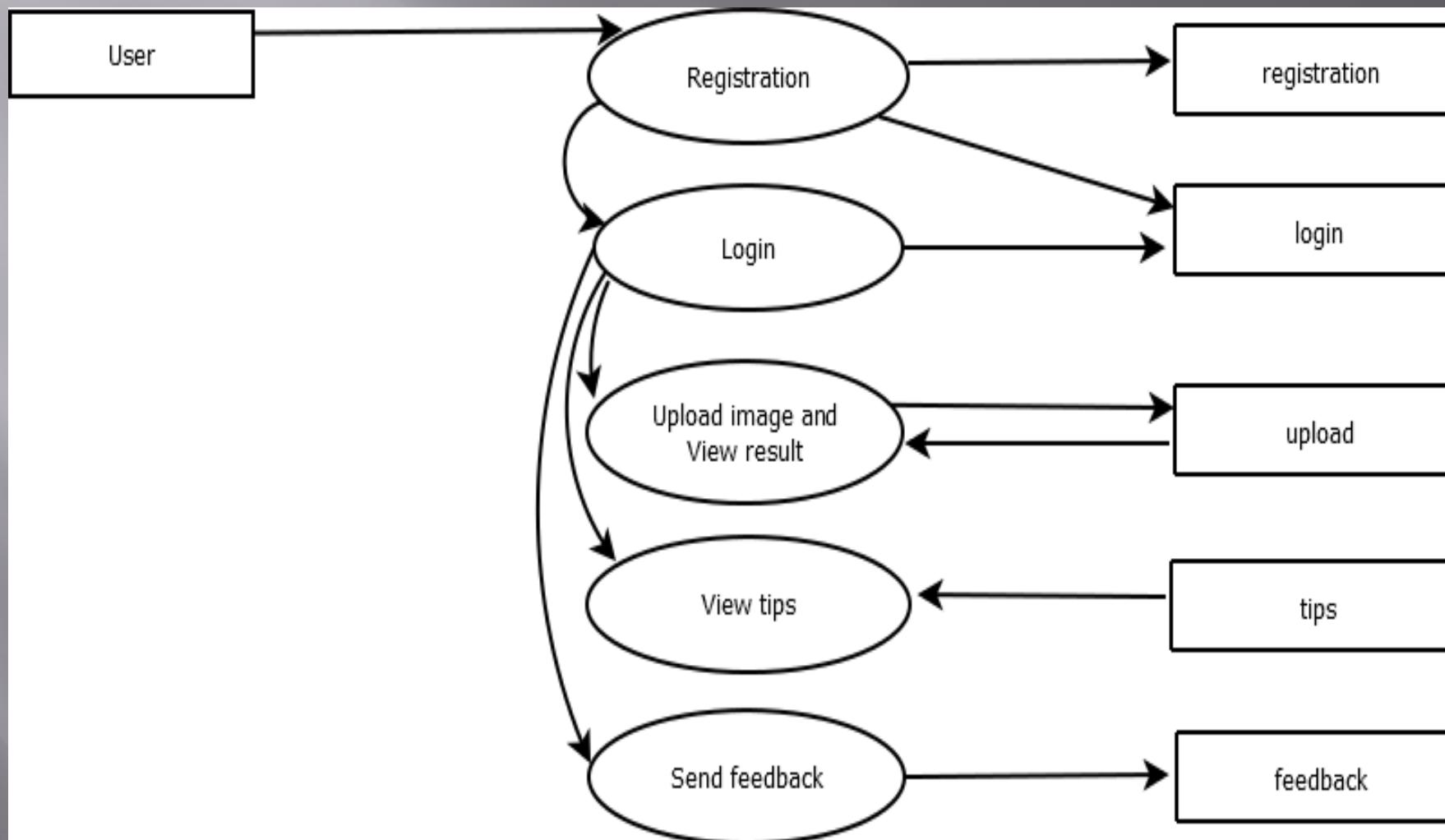


TABLE DESIGN

SQLyog Community 6.1 - [New Connection/retinal_disease - root@localhost]

File Edit Favorites Database Table Others Tools Powertools Transactions Window Help

New Connection +

Retertables in retinal_disease

Riter (Ctrl+Shift+B)

- root@localhost
- aa
- information_schema
- mysql
- performance_schema
- retinal_disease
 - Tables
 - feedback
 - login
 - Columns
 - Indexes
 - registration
 - tips
 - treatment
 - upload
 - Views
 - Stored Proc
 - Functions
 - Triggers
 - Events
 - test

No nag screens on startup and shutdown : Reason #1 to upgrade

Query login +

Table Name: login Engine: InnoDB

Database: retinal_disease Character Set: latin1

Collection: latin1_swedish_ci

1 Columns 2 Indexes 3 Foreign Keys 4 Advanced 5 SQL Preview Hide language options

Column Name	Data Type	Length	Default	PK?	Not Null?	Unsigned?	Auto Incr?	Zerofill?	On Update
lid	int	11		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
username	varchar	25		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
password	varchar	25		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
type	varchar	25		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

< >

Save Revert

Connections: 1 Upgrade to SQLyog Professional/Enterprise/Ultimate

Search the web and Windows

1:32 PM 1/9/2022

DEVELOPING ENVIRONMENT

- ❑ OPERATING SYSTEM: WINDOWS 10
- ❑ FRONT END: HTML, CSS, JAVASCRIPT
- ❑ BACK END: Mysql
- ❑ SOFTWARES USED: JetbrainsPycharm, Android Studio
- ❑ TECHNOLOGY USED: PYTHON, JAVA
- ❑ FRAME WORK USED: Flask

USER STORY

UserStoryID	As a <type of user>	I want to <perform some task>	So that I can <Achieve some goal>
1	Expert	login	login successful with correct username and password
2	Expert	Add and manage dataset	Add disease effected fundus image to dataset. Compare the uploaded image in here to predict the disease.
3	Expert	Add and manage tips	Add tips for users and view the added tips.
4	Expert	View feedback	View feedback
5	Expert	Add and Manage treatments	Add treatments for users
6	User	Register	User can register with this app
7	User	Login	login successful with correct username and password

8	User	Upload image and view result	Upload image and View result
9	User	View tips	View added tips
10	User	Send feedback	Send feedback
11	User	View treatments	View added treatments

PRODUCT BACKLOG

User Story ID	Priority <High/Medium/Low>	Size (Hours)	Sprint <#>	Status <Planned/In progress/Completed>	Release Date	Release Goal
1	Medium	2	1	Completed	08/01/2022	Table design
2	High	3		Completed	08/01/2022	Form design
3	High	5		Completed	08/01/2022	Basic coding
4	High	5	2	Planned		Obtaining Gaussian blurred image from retinal image
5	Medium	5	3	Planned		Preprocessing
6	High	5		Planned		Image classification
7	Medium	5		Planned		Prediction
8	Medium	5	4	Planned		Testing data
9	High	5		Planned		Output generation

PROJECT PLAN

User Story ID	Task Name	Start Date	End Date	Days	Status
1	Sprint 1	26/12/2021	28/12/2021	2	Completed
2		29/12/2021	31/12/2021	3	Completed
3		03/12/2021	08/01/2022	5	Completed
4	Sprint 2	09/01/2022	13/01/2022	5	Planned
5		14/01/2022	18/01/2022	5	Planned
6	Sprint 3	19/01/2022	23/01/2022	5	Planned
7		03/01/2022	07/02/2022	5	Planned
8		08/02/2022	12/01/2022	5	Planned
9	Sprint 4	16/02/2022	20/02/2022	5	Planned

SPRINT BACKLOG PLAN

Image classification	23/01/2022	5	5	1	1	1	1	0	0	0	0	0	0	0	0	0	0
																	0
prediction	07/02/2022	5	0	0	0	0	0	2	1	2	0	0	0	0	0	0	0
User story #8, #9																	
Testing data	12/02/2022	5	0	0	0	0	0	0	0	1	1	2	1	0	0	0	0
Output generation	20/02/2022	5	0	0	0	0	0	0	0	0	0	0	0	2	2	2	1
Total		40	3	3	2	2	2	4	2	3	1	4	3	4	4	4	3

SPRINT ACTUAL

THANK YOU